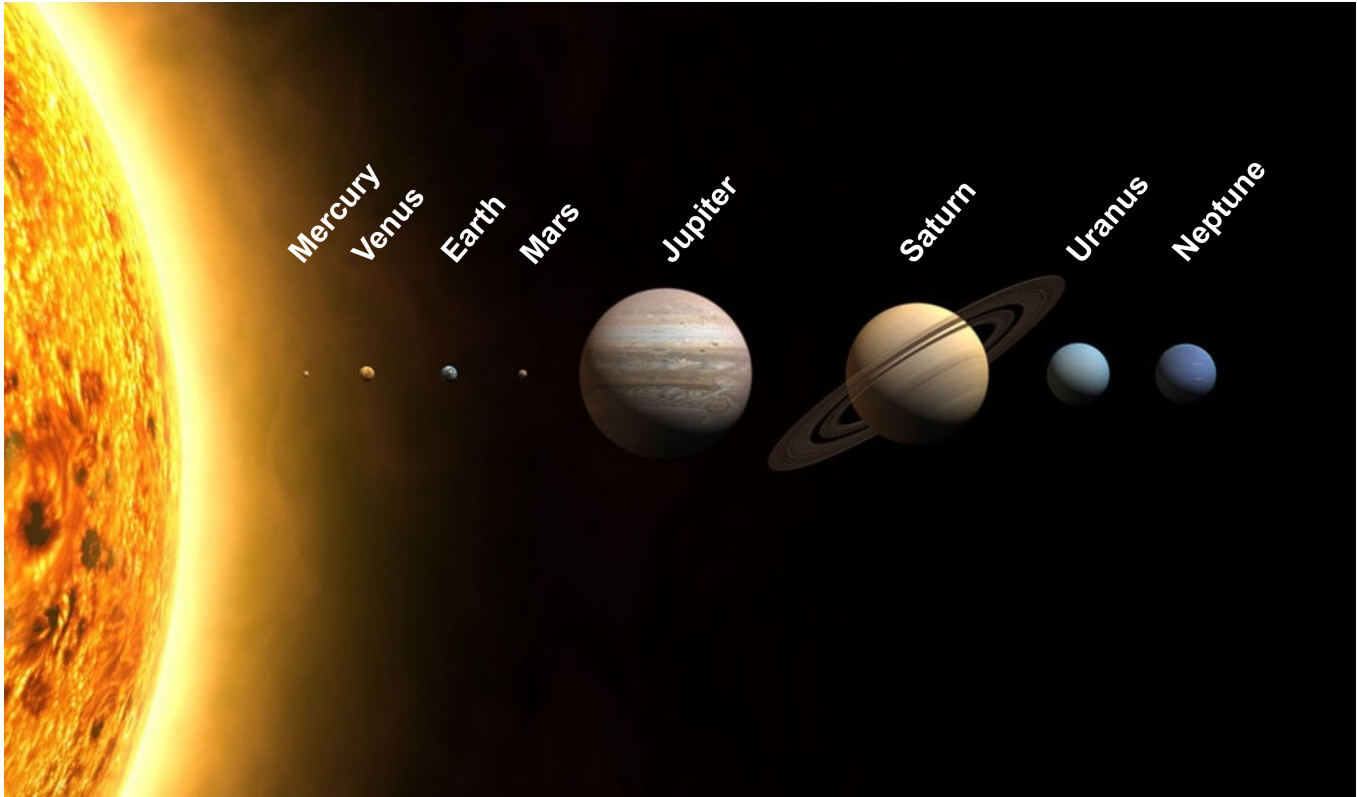


6: Solar System- Origin and Basics

Learning Objectives

- Take an inventory of the Solar System and its major bodies.
- Examine smaller bodies in the Solar System, including asteroids, meteoroids, and comets.
- Examine the Kuiper Belt and Beyond.
- Describe the origin and evolution of the Solar System.



<https://commons.wikimedia.org/wiki/File:lanets2013.svg>

So far, we have discussed several ways we can study and learn about objects in our solar system.

1. We can determine the distance from Sun by Kepler's laws.
2. The orbital period can be observed by tracking its position in the sky.
3. The planet's radius can be determined from distance and from angular size.
4. We can use Newton's laws to determine a planet's mass.
5. Rotational period can also be known from observations.
6. Knowing radius and mass, we can calculate a planet's volume therefore, density.

With this information, can start taking an inventory of the solar system. It contains one star, eight planets, over 200 moons, at least five dwarf planets, and numerous smaller bodies such as asteroids, meteoroids, Kuiper Belt objects, and comets. Of the eight planets, we can separate them into two categories, **Terrestrial (Earth-like) planets** and **Jovian (Jupiter-like) planets**. The solar system has four Terrestrial planets (Mercury, Venus, Earth, and Mars) and four Jovian planets (Jupiter, Saturn, Uranus, and Neptune). The table below compares several properties of Terrestrial and Jovian planets.

Terrestrial Planets	Jovian Planets

Orbit close to the Sun	Orbit further away from the Sun
Orbits are closely spaced	Orbits are farther apart
Predominantly rocky	Predominantly gaseous
Have small mass	Have large mass
Have small radii	Have large radii
Have high density	Have low density
Have few moons	Have numerous moons
Solid surface	No solid surface
Slow rotation	Fast rotation
Weak or no detectable magnetic fields	Strong magnetic fields
No rings	Several rings



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